the Cubes of the apertures of the Object-Glaſſes; and thence to make Teleſcopes of various lengths, magnify with equal diſtinctneſs, the apertures of the Object-Glaſſes, and the Charges or magnifying Powers, ought to be as the Cubes of the ſquare Roots of their lengths; which doth not anſwer to Experience. But the errors of the Rays ariſing from the different refrangibility, are as the apertures of the Object-Glaſſes, and thence to make Teleſcopes of various lengths, magnify with equal diſtinctneſs, their apertures and charges ought to be as the ſquare Roots of their lengths; and this anſwers to experience as is well known. For inſtance, a Teleſcope of 64 Feet in length, with an aperture of $2\frac{2}{3}$ Inches, magnifies about 120 times, with as much diſtinctneſs as one of a Foot in length, with $\frac{1}{3}$ of an Inch aperture, magnifies 15 times.

Now were it not for this different refrangibility of Rays, Teleſcopes might be brought to a greater Perfection than we have yet deſcribed, by compoſing the Object-Glaſs of two Glaſſes with Water between them. Let ADFC repre-
Fig. 28. ſent the Object-Glaſs compoſed of two Glaſſes ABED and and BEFC, alike convex on the outſides AGD and CHF, and alike concave on the inſides BME, BNE, with Water in the concavity BMEN. Let the Sine of Incidence out of Glaſs into Air be as I to R and out of Water into Air as K to R, and by conſequence out of Glaſs into Water, as I to K: and let the Diameter of the Sphere to which the convex ſides AGD and CHF are ground be D, and the Diameter of the Sphere to which the concave ſides BME and BNE are ground be to D, as the Cube Root of KK—KI to the Cube Root of RK—RI: and the Refractions on the concave ſides of the Glaſſes, will very much correct the Errors of the Refractions on the convex ſides, ſo far as they ariſe from the ſphericalneſs of the Figure. And by this means

might